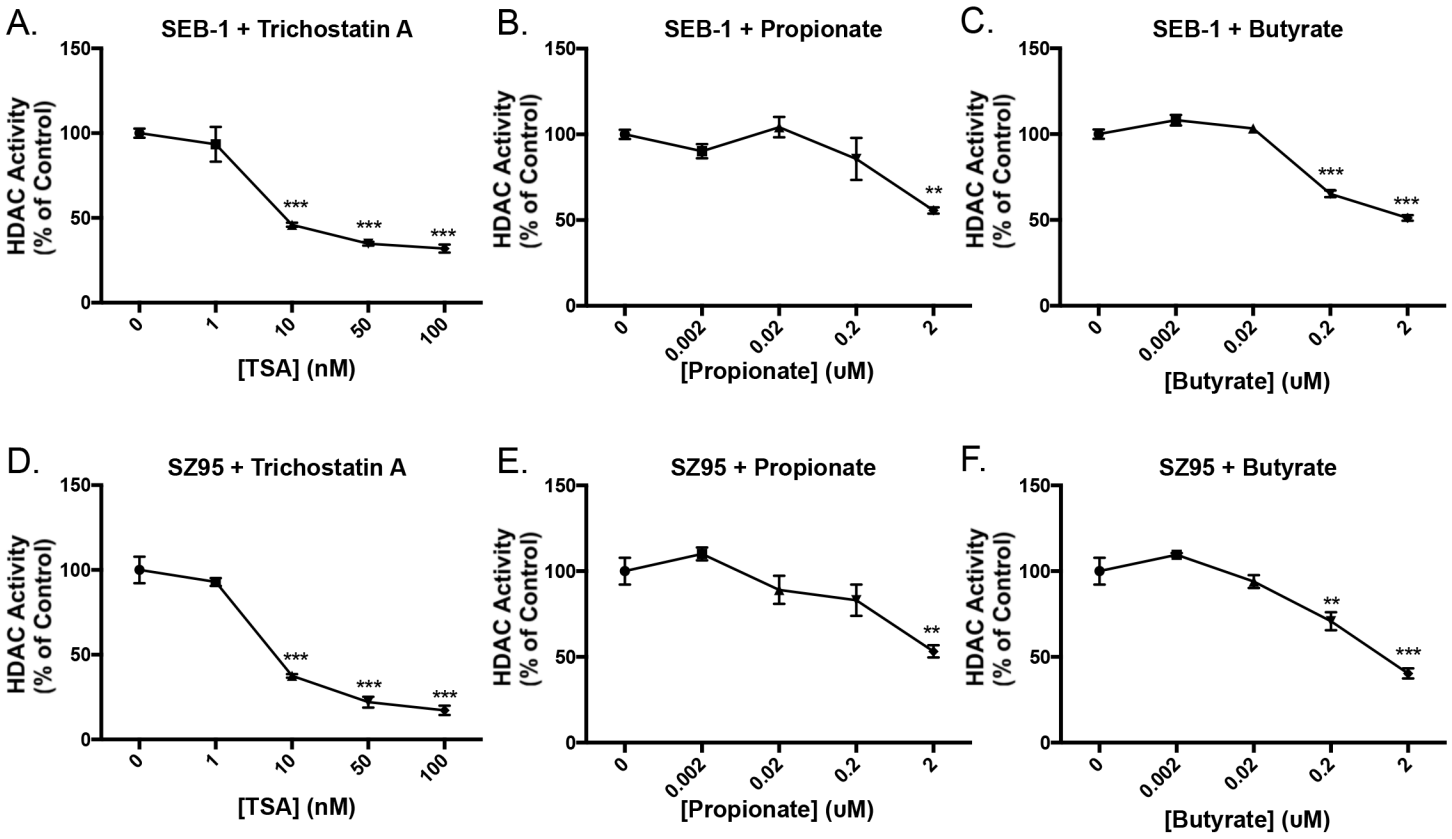
Table S1. Catalog Numbers for Reagents Used

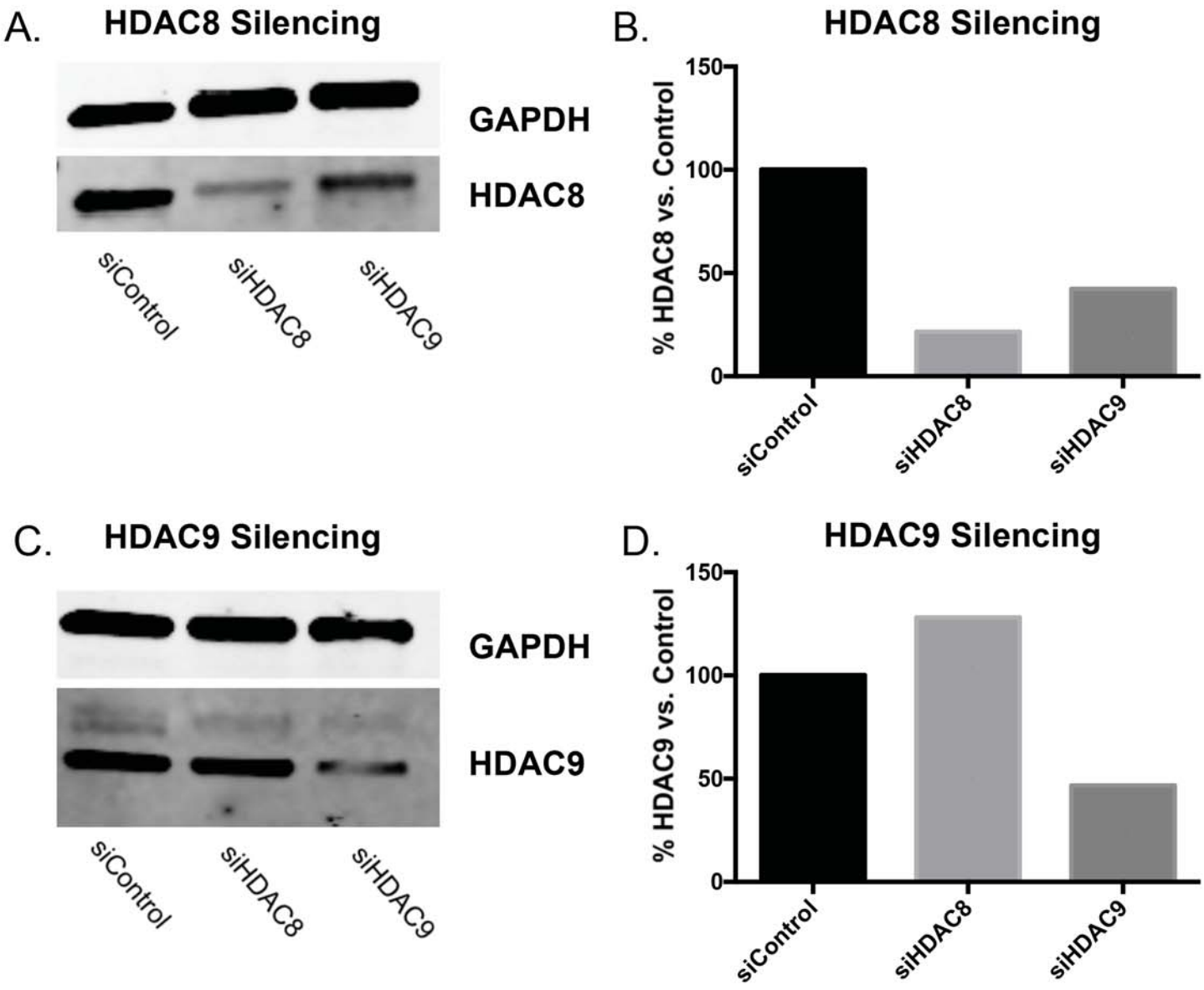
Silencer Select siRNA Oligos		
Gene	**Catalog #**	**Manufacturer**
Negative Control	4390843	Ambion/ ThermoFisher
HDAC8 #1	s31698	Ambion/ ThermoFisher
HDAC8 #2	s31697	Ambion/ ThermoFisher
HDAC9 #1	s18775	Ambion/ ThermoFisher
HDAC9 #2	s18774	Ambion/ ThermoFisher
FFAR2	s223804	Ambion/ ThermoFisher
FFAR3	s230084	Ambion/ ThermoFisher
HCAR2	s50344	Ambion/ ThermoFisher
HDAC1	s73	Ambion/ ThermoFisher
HDAC2	s6493	Ambion/ ThermoFisher
HDAC3	s16878	Ambion/ ThermoFisher
BD OptEIA ELISA Kits		
Target	**Catalog #**	**Manufacturer**
IL-6	BDB555220	BD Biosciences
IL-8	BDB555244	BD Biosciences
Taqman Gene Expression Assays		
Gene	**Catalog #**	**Manufacturer**
GAPDH	Hs99999905_m1	ABI/ ThermoFisher
HDAC1	Hs02621185_s1	ABI/ ThermoFisher
HDAC2	Hs00231032_m1	ABI/ ThermoFisher
HDAC3	Hs00187320_m1	ABI/ ThermoFisher
HDAC4	Hs01041638_m1	ABI/ ThermoFisher
HDAC5	Hs00608366_m1	ABI/ ThermoFisher
HDAC6	Hs00195869_m1	ABI/ ThermoFisher
HDAC7	Hs00248789_m1	ABI/ ThermoFisher
HDAC8	Hs00954353_g1	ABI/ ThermoFisher
HDAC9	Hs00206843_m1	ABI/ ThermoFisher
HDAC10	Hs00368899_m1	ABI/ ThermoFisher
HDAC11	Hs00978041_m1	ABI/ ThermoFisher
FFAR2	Hs00271142_s1	ABI/ ThermoFisher
FFAR3	Hs02519193_g1	ABI/ ThermoFisher
HCAR2	Hs02341584_s1	ABI/ ThermoFisher
IL-1beta	Hs00174097_m1	ABI/ ThermoFisher
IL-6	Hs00985639_m1	ABI/ ThermoFisher
IL-8	Hs00174103_m1	ABI/ ThermoFisher
TNFalpha	Hs00174128_m1	ABI/ ThermoFisher
TSLP	Hs00263639_m1	ABI/ ThermoFisher
CXCL2	Hs00601975_m1	ABI/ ThermoFisher
CXCL10	Hs00171042_m1	ABI/ ThermoFisher

Supplemental Figure 1.



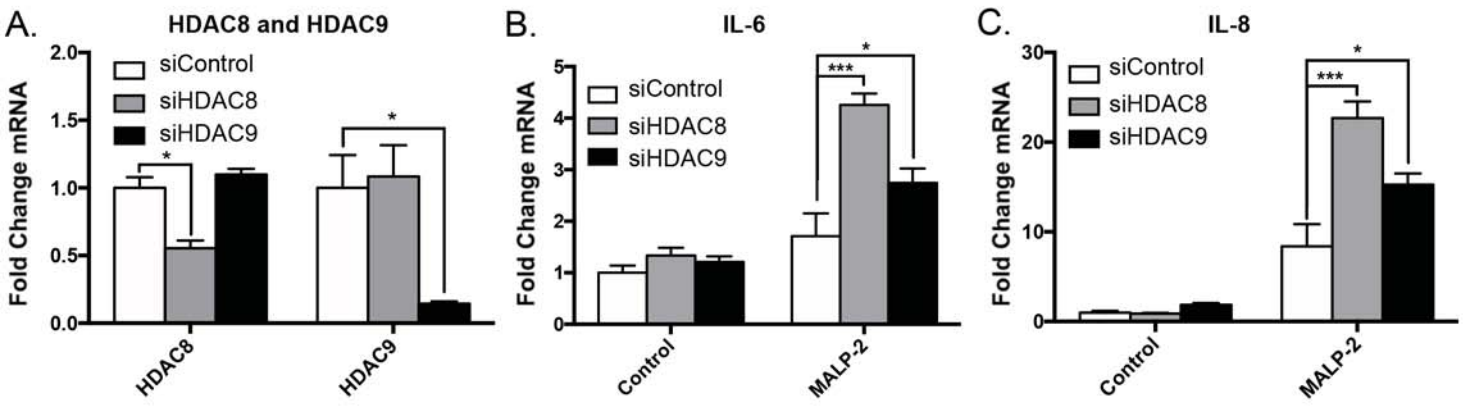
Supplemental Figure 1. Inhibition of HDAC activity in sebocytes by short-chain fatty acids. HDAC activity was measured in nuclear extracts of SEB-1 sebocytes (**A-C**) or SZ95 sebocytes (**D-F**) incubated with increasing concentrations of Trichostatin A (**A,D**), propionate (**B,E**) or butyrate (**C,F**). HDAC activity was calculated as percentage of control (untreated) extracts for each cell type. Data shown are mean +/- SEM of one experiment representative of two independent experiments with n=2 for each condition. *p<0.05; **p<0.01; ***p<0.001 as determined by one-way ANOVA.

Supplemental Figure 2.



Supplemental Figure 2. HDAC8 and HDAC9 depletion by siRNA. SEB-1 sebocytes were treated with siRNA specific for HDAC8 or HDAC9 as described in the Materials and Methods section. Western blots were performed to measure the protein-level depletion of HDAC8 (**A,B**) and HDAC9 (**C,D**) and densitometry analysis was used to calculate the efficiency of knockdown relative to control siRNA-treated cells. Data is representative of three independent experiments.

Supplemental Figure 3.



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2 **Supplemental Figure 3. Additional siRNA oligonucleotides used for depletion of HDAC8**
3 **and HDAC9 in sebocytes enhance cytokine response.** SEB-1 sebocytes were treated with
4 siRNA oligonucleotides specific for HDAC8 or HDAC9, or a negative control. **A)** Measurement
5 of HDAC8 and HDAC9 expression levels, normalized to GAPDH levels, following treatment
6 with siRNA. **B-C)** Expression levels of IL-6 and IL-8 from sebocytes treated with the TLR2/6
7 ligand MALP-2 following siRNA-mediated depletion of HDAC8 or HDAC9 (transcript
8 abundances normalized to GAPDH). For graphs, data shown is mean +/- SEM for one
9 experiment representative of three independent experiments with n=3 for each condition.
10 *p<0.05; **p<0.01; ***p<0.001 as determined by two-way ANOVA.

11

12